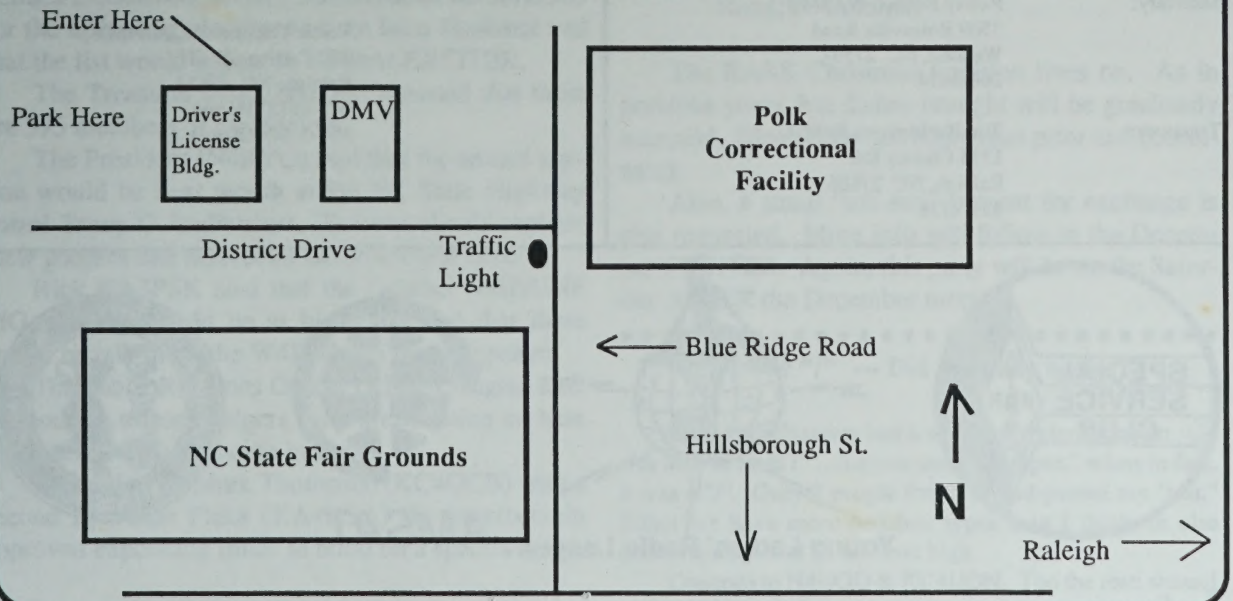
The RARS Exciter

Issue 260 - November, 1991 - Club Repeaters: 146.04/64 , 223.04/224.64 , & 444.5/449.5

RARS Meeting, Election of Officers, and Annual Auction: Wednesday, November 6th NC Highway Patrol Auditorium

Folks with gear to sell should be there by 6:30 PM!
Meeting STARTS at 7:00 PM
Auction starts at 7:30 PM



The Raleigh Amateur Radio Society, Inc. (RARS), founded in 1969, has grown to be one of the premier radio clubs in North Carolina. Current membership exceeds 390.

The objectives of the club are to promote world wide friendship through Amateur Radio; to be of public service by providing radio communication in times of disaster, emergency, or civic need; to educate members in radio technique, and to assist in obtaining Amateur Radio licenses.

All persons interested in Amateur Radio, currently licensed or not, are eligible to apply for membership to the club.

Dues to the club are $12.00 per year (which runs from July 1 to June 30). Applications for membership may be obtained from any of the officers named below; from the newsletter editor, named on the facing column; or at any RARS Meeting.

Club meetings are held the first Wednesday of every month, 7:30 PM, at the Raleigh YMCA, 1601 Hillsborough St.

In addition to the many social and special events, the club sponsors a 2 m repeater, W4DW, on 146.04/64 MHz. The club also sponsors repeaters on 223.04 / 224.64 MHz, 444.5 / 449.5 MHz, & 444.95 / 449.95 MHz. All repeaters cover Raleigh, and most of the surrounding Wake County area. Auto-patch privileges are available on W4DW to duly licensed RARS members. Future plans call for additional repeaters on the 50 MHz amateur band.

1991 Officers:

President:	Jim DuBreck, N4BYO 1209 Shelly Road Raleigh, NC 27609 781-9437
Vice President:	Anita Kellum, KC4AQB 208 Chatterson Drive Raleigh, NC 27615 846-7455
Secretary:	Ronny Reams, WA4MJF 3509 Rolesville Road Wendell, NC 27591 266-4434
Treasurer:	Tim Buehlmann, N4IQA 1314 Chaney Rd. Raleigh, NC 27606 851-7738

The EXCITER is published monthly by the Raleigh Amateur Radio Society, and is mailed at no cost to its members.

Letters to the Editor, technical articles, items of interest to the ham community and guest editorials are actively solicited.

Any article published in the EXCITER does not necessarily represent the views of, the Officers, Board of Directors, Editor, or Society Membership, nor does publication thereof represent concurrence by the Officers, Board of Directors, Editor, or Society membership with the contents of the article.

Articles will be printed at the discretion of the Editor, and no article will be published unless it is accompanied by the name(s) of the person(s) submitting the article.

All copy must be in the hands of the editor by the end of the Board of Director's meeting on the third Wednesday of each month. Articles submitted for publication may be hand or type written, an ASCII file on disk (IBM or APPLE format), transmitted electronically via telephone modem, or on the ham bands using RTTY or PACKET.

Ham related items for sale by the members will be advertised without charge for one issue, but may be re-submitted as often as desired. These ads must be non-commercial in nature.

Commercial ads will be run in return for the following donations to the club:

	Single Issue	Full Year
Business Card	$5.00	$25.00
Quarter Page	$10.00	$50.00
Half Page	$20.00	$100.00
Full Page	$30.00	$150.00

(Commercial ads must be of "camera-ready quality," and obviously can not be sent via ham bands.) Due to the reprographic process used, no color copy can be accepted.

Advertisers are guaranteed a minimum monthly mailing of 400 copies.

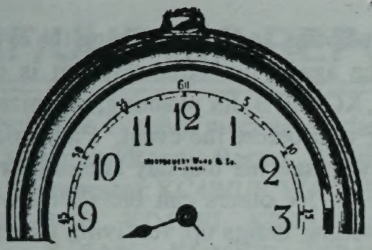
Editor:	Vince Yakamavich, AA4MY 220 Carriage Trail Raleigh, NC 27614 847-8512 (Home) 850-5390 (Office)

SPECIAL SERVICE CLUB

Young Ladies' Radio League

AMSAT

SOUTHEASTERN REPEATER ASSOCIATION MEMBER



Minutes of the Meeting

The regular monthly meeting of the Raleigh Amateur Radio Society, Inc. was held on 02 OCT 91 at the YMCA on Hillsborough Street. President Jim DuBreck welcomed the 87 members and 6 guests.

The Public Relations Officer (KN4AQ) passed around a sheet for members who were interested in media contact to sign.

The Vice President (KC4AQB) reminded us that the annual RARS picnic would be Saturday 05 OCT at ABB.

The acting Public Service Director (KC4UQO) asked those that could sign up to help the Red Cross with their radio and telephone communications during State Fair week. Training director Bob Rinn (N4VQN) told us that the Fall Novice/Tech course was almost full, and set to start at Sanderson HS in couple of weeks.

The Chairman of the Nominating Committee (Chuck Littlewood, K4HF) stated that all nominations for the upcoming election had not been finalized and that the list would appear in the next EXCITER.

The Treasurer (Tim, N4IQA) reported that there are 395 members of the Society.

The President (N4BYO) said that the annual auction would be next month at the NC State Highway Patrol Troop C Auditorium. Persons should register their goodies one hour prior to the auction time.

Rick KA3PSK said that the October VHF/UHF SIG meeting would be at his house and that there would be talk in on the W4DW two meter repeater.

The Public Relations Officer (KN4AQ) again took the podium to seek helpers for a presentation on ham radio at an old folks home in Cary.

On motion by Mark Thompson (KC4OCB) with a second by Allen Plaks (KA4NSA) the membership approved expending funds to build on a specified site, a building of specified size after obtaining any permits required at a cost not to exceed $1000.00.

The Wake County ARES coordinator (KM4LB) said that he was getting up a batch order for ASTRON power supplies. Tom also stated that he had some of the official ARES power cables tonight.

Our lovely Vice President ('Nita, KC4AQB) introduced Ed Engebretson (W4YC), our guest speaker, . Ed gave a presentation on satellite telephone communications.

The door prize was won by KD4EIP.

The meeting was adjourned.

Ronald G. Reams, WA4MJF Secretary

RARS Christmas Party Saturday, Dec. 7th

What: RARS Christmas Party

Who: RARS members and their families.

When: Saturday, December 7th 7:00 PM till 11:00 PM

Where: Home of Jim and Mary Ann DuBreck (Shelley Road, N. Raleigh)

The RARS Christmas tradition lives on. As in previous years, hot dishes brought will be graciously accepted. (But please call Mary Ann prior and coordinate).

Also, a small "uni-sex" present for exchange is also requested. More info will follow in the December EXCITER. Again, this party will be on the Saturday AFTER the December meeting.

"BT" or "/" --- Did anybody notice??

Last month's cover had a seemingly glaring error: -...-. was said to be BT "...for you codeless types." when in fact, it was a "/". Only 2 people found it, and passed my "test." Either we have more codeless types than I think, or else reader apathy is at an all-time high.

Congrats to N4UOD & KC4UQN. Too the rest: shame!

'91 RARS Picnic

One to remember!

What's that you say? You ***weren't*** at the RARS Picnic? Shame on you! What did you miss? Nothing much. Just a ***fantastic*** time with well over 200 people.

You missed a tremendous barbecue where 2 pigs (219 pounds of pork), 40 pieces of chicken, and several dozen hotdogs met their fate. You missed a nifty display of some antique radios, put on by Tim N4IQA and Bob, NA4G. You missed some intense volleyball competition, run by Rick Yost, N4VTQ. Your kids missed out on the neat children's games run by Carla Gleason, KB4MDY, & Jay Diepenbrock, KM4EP. You missed the generosity and culinary treats of many of the ladies of RARS, who brought many delicious & varied hot dishes & desserts. But worst of all, you missed the efforts of the dozen or so fellow club members who planned and prepared for the event, sweated over a hot grill all day long, and cleaned up afterwards, all so you could not be bothered to even show up.

Do I sound bitter? I'm not, really. It's probably better that you didn't come — there were only 15 pounds of pig left, and I don't remember ***any*** desserts remaining! As a matter of fact, we probably pushed the limits of the picnic facility, there were so many people, so much fun, and so much food.

Those of us who ***were*** there certainly want to thank the chefs: Ronnie Reams, WA4MJF; Dave Montoya, KD4ACT; Sonny Kellum, KO4CI; Max Bloodworth, KC4UQP; and Wilbur Goss, WD4RDT. (Also thanks to Mark Thompson, KC4OCB who arranged for the free use of the cookers, and did a lot of leg work in preparation, but had to miss the picnic because of ARMY Reserves that weekend.). A big "thanks" to Roger Moates, W3EZR and his company, ABB, for allowing us to use their fine picnic facility again.

Also thanks to some of the special gals of RARS: Nola Alderman, Sandy Thomas, KC4SYV; Sherry Reams, KB4EXL; Sue Buehlmann (who ran the food contest), Janet Payne, N4WPX; Lynn Pitegoff, KC4NJB; Liz Gordon-White, KO4CK; & Joyce Yakamavich, WB7TXO. These gals helped with the telephone calling, serving, and/or organizing the event.

Once again, our collective hat is off to Anita Kellum, KC4AQB, for planning, organizing and coordinating well before the event. Picnic day ... well ... anyone who saw her that day knows how much work making fun for others can be. 'Nita was ... ***everywhere***, setting things up, resolving those last minute "details" ("Whattya' mean we're out of soda and ice? We haven't started eating yet!"). Afterwards, she was still there, cleaning up the mess we left.

'Nita didn't even get a chance to sit and eat at the picnic — she was too busy making sure everyone else was taken care of. Clearly devotion "above and beyond." It was a fantastic picnic, thanks to the efforts of many people. But 'Nita took the responsibility for pulling it all together, and couldn't even sit to enjoy the fruits of her labors. "Thank you" just doesn't seem enough.

I'll go on record as making a motion to the club, that as a gesture of appreciation and thanks for her efforts at the RARS Picnic, RARS buy a full dinner for Anita & her husband at a local restaurant of their choice.

AA4MY

Welcome New Members!

A hearty RARS welcome to 11 new members this month:

Steven Bland, KD4EVZ, Apex
Clair Clairborne, KC3WJ, Raleigh
Dave Daniels, WB8QYV, Raleigh
Thomas Gordon, WW8D, Bluefield, WVa(!)
Robert E. Grimes, Fuquay
Doug Hall, KF4KL, Raleigh
Justin Heinecke, KD4CPM, Chapel Hill
James C. Howard, KB2ZO
Bob McGahan, KD4DQY, Durham
Tabitha Valkyrie, Raleigh
Alexi Yurchak, Durham

With the addition of these fine folks, RARS now stands at 395 members! As always, we welcome you into our fine organization, and look forward to meeting with you on the air and at our meetings. Welcome!

VHF/UHF SIG REPORT

We held our October meeting on the 9th at the home of Sherry and Ronnie Reams. A lucky group of 13 Hams were present: KC4WUF, WA4PEN, AB4OZ, KS2Z, KC4NJB, KD4BFJ, KD4BFU, WA4MJF, KB4EXL, K4SAN, KC4OCB, KB4VYP, and WA4LHE.

Ed, WA4PEN, called the meeting to order, made a few announcements, and passed out the evening's agenda. Glenn, WA4LHE, gave a brief treasurer's report.

The status of each RARS repeater was discussed next. The 2-meter machine is up and operating very well, but the 220 Mhz repeater is still down. No progress yet to report on the work planned for the 440 Mhz machines and the 6-meter remote base. Also, there is no new information to report on the new antenna sites under investigation.

Lynn, KC4NJB, gave a report on the last DFMA meeting and the speaker on Rohn towers that they had.

A discussion was held on 6-meter surplus equipment and modifications for Ham radio.

Dave, K4SAN, discussed VHF/UHF DX and contests and reminded the SIG to think about the June QSO party.

Brian, KD4BFJ, told the SIG about an exciting rocket launch soon by the Southeast Community College. The rocket is planned to reach an altitude of 300,000 feet and will have VHF and UHF Ham transmitters on board.

Lynn, KC4NJB, told the SIG that we need Santa for the Operation Santa Claus this year. If you can help, give her a call.

Tod, KS2Z, told the group about the exciting projects planned for the packet cluster.

The meeting ended by Ed asking all to think of those that deserve recognition certificates for efforts this past year. He will ask for input at the next SIG meeting.

The meeting closed and we found (would you believe 3) pound cakes for desert. It makes one wonder what are the odds of 3 people bringing the same desert at the same time. We all left a pound heavier.

Glenn Clary
SIG Secretary/Treasurer

Nominating Committee Report

This year's nominating committee, appointed by the President, consisted of Chuck Littlewood, K4HF, and John Jaskolka, N4YRD. We would like to thank the several RARS members who provided input to the committee.

The committee's report is presented here and to the membership at the regular November RARS Meeting.

Following the report, nominations will be accepted from the membership and then voting will take place.

The President and Secretary would serve two year terms and the others would be for one year. Also, as directed by the Board, all would serve as members of the Board of Directors except the Special Events Chairman and the W4DW Trustee.

The following is the proposed slate of 1992 RARS officers:

President:	Walter Price, KM4BU
Secretary:	Liz White, KO4CK
Newsletter:	Mike Gingell, KN4BS
Repeater:	Chuk Gleason, KB4MDZ
Training:	Jim DuBreck, N4BYO
RARS Exams:	Vince Yakamavich, AA4MY
Publicity:	Gary Pearce, KN4AQ
Public Service:	Bill Bressler, KC4UQO
SIG Representative:	Ed Aldermam, WA4PEN
ARRL Liason:	Chuck Littlewood, K4HF
Special Events:	Walter VanGieson, AB4DQ
W4DW Trustee:	Lynn Pendleton, K4NYV

New Calls:

RARS congratulates our members on their new amateur calls.

Kelly Andrews, KD4EWG
Rebekah Lynn Starling, KD4FJQ

(Why is it the YLs get the worst ones??)

Old Radios and RARS

"The N4UOF Challenge" to YOU

Ever bought an unscratched (Heath or Collins) rig at a hamfest? You take it home, and realize that you made THE BIG MISTAKE!! It was unmarred because it never worked and/or was never used! You mistook appearance for reality!

Yet, ever find an old beat-up radio? Even it's owner thinks it doesn't work, but you take a chance, take it home and it works perfectly!! Those scratches and the worn paint on it came from long usage (experience?). You suddenly realize you can't use something without causing some wear and tear. Appearance again is NOT reality.

This works for people too!! Ever notice that some folks you thought were friends really were not. They LOOKED like friends, but in reality they were using you for their own selfish ends, while your REAL friends were making you mad by telling you the truth? Again you were fooled into thinking appearance was reality. Ever notice your REAL friends' abrasiveness? They are making you think, even "shining" you (getting the rough edges off). We can even see this when people (esp. teenagers) fall in love. They almost "hate" their beloveds. "Mary makes me so mad." The lovers get under each other's skins. But we know that THAT KIND OF "HATRED" IS A SIGN OF TRUE LOVE!

It is said that you can't make omelets without breaking some eggs. "No pain, no gain", as the weightlifters say. Nothing can get better without something getting broken, without some change and abrasion. I am told there are three kinds of people in the world:

1. Those who **MAKE** things happen.
2. Those who **WATCH** things happen., and
3. Those who DON'T EVEN KNOW what is happening!

Repeating Vince's words to me, I want to "challenge" you to be someone who breaks eggs and makes omelets. Be someone who makes things happen. Become a "RARS LOVER". Go to every RARS meeting you can (at least KNOW what is happening). Visit EVERY SIG and attend EVERY board meeting (to MAKE things happen) AT LEAST ONCE!! Get under RARS' skin. Make RARS stretch and grow. Challenge ALL ASSUMPTIONS. Never assume that another ham <<YOU>> think is the dumbest person alive cannot teach you something new (EVEN IF IT IS A LESSON WHAT <<NOT>> TO DO). Always treat everyone with dignity (again appearance does not = reality).

I wish I had room to give the details of an antenna problem five hams got into during Field Day 1991. In short, a ham who had a super reputation for being right told us that X=Y. BECAUSE OF HIS REPUTATION ALONE we all believed him for 3 hours. A Novice came along and pointed out that obviously X did not equal Y!! Five very experienced hams were puzzled for 3 hours. We assumed the expert was right. Yet thanks to an newcomer, the problem was quickly solved! Don't be afraid of change. (RARS cannot continue to grow without change). Don't be someone who WATCHES things happen; MAKE things happen!

But be careful, or you might get MY reputation for being an "irritant" or "heretic". (I prefer the description "Benign troublemaker" — a reputation I wear proudly, incidentally). But even if the good you do is totally ignored (expect that to happen — "Success has many fathers. failure is an orphan") — you or your SIG will have the satisfaction of knowing that YOU made that contribution — despite all its new found fathers! Don't be someone who never takes chances and who takes appearance to be reality. Above all don't let OTHERS make changes when YOU could have made a BETTER change for all of us.

Try not to criticize the efforts of others (it is always easier to criticize than to build up), but if you see wrong being done, do not hesitate to at least ASK about it. The Nazis got away with murder because silent people let them! "Smart folks learn from their own mistakes, but the smartest people learn from the mistakes of others! "Only problem is SOMEONE HAS TO HAVE THE COURAGE TO MAKE THE MISTAKE IN THE FIRST PLACE!! NICE THING ABOUT AMATEUR RADIO IS THAT YOU WON'T GET FIRED IF YOU MAKE ONE. WHY WAIT FOR OTHERS TO ACT? BE A MOVER AND SHAKER. BE A "BENIGN TROUBLEMAKER". BE A LOVER OF RARS!!

YES, I'll take a scratched and dented rig THAT WORKS every time over the beautiful polished cabinet (that doesn't work or has to be begged to work) every time (you can always make a new cabinet!) — how about you??

73, Al Johnson, N4UOF

My First Exposure

Pete Memolo, KN4OO

It was a Friday morning and I was awoken by a frantic phone call from my dispatcher asking if I could please come in and take a hot load to Los Angeles. (In the trucking industry, every load is a "hot" load.) Although I halfheartedly agreed to go, I was not really looking forward to having a new co-driver for such a long trip.

(Fast Forward)

Meeting my co-driver was not as bad as I had imagined (it was worse — just kidding). Ray was an older gent, who had a lot of driving experience. While was getting the paper work done, Ray took my gear and went to the truck and pulled it in front of the building. I walked out and almost fell over, for in front of me was a brand spanking new Peterbilt, bristling with more antennas than a large fishing boat. I knew then there was something weird about old Ray...

My suspicions were confirmed when Ray told me to take the first shift, explaining he likes driving at night, because he could get some good contacts on 80 meters. I had absolutely no idea of what he was talking about. But if ***he wants*** to drive all night, who was I to argue?

Climbing into the cab of that truck left a major impression on me. This Peterbilt cab looked more like a sidewalk sale at Radio Shack than a truck. Speakers, wires, radios and microphones were everywhere. Now I had seen some big CB fanatics on the road, but this guy was plum crazy!

Ray did his best to explain every radio and it's unique function, while I sat mesmerized in the driver's seat, wondering if my boss would let me change my mind about this trip... Well, it was just for 2 days ... maybe I could put up with crazy ole' Ray and his radios for 2 days... Besides, the new truck would be a whole lot more comfortable than the alternatives.

(Fast Forward)

4:00 AM (California time.) I woke up noticing the truck was not moving, and there were some very strange sounding voices and noises out there. I crawled out of the sleeper to see what the problem was. No problem, just good 'ole Ray ... talkin' on his radio. I sat there in the passenger seat, looking into the darkness, wondering what could possibly be so important with the radio that he had to stop the truck.

Ray finished his conversation, and noticed me sitting there with more than a puzzled look on my face. Ray explained that he had just finished talking with his wife. We were stopped at Cajun Summit (elev. 4,257 ft on I-15 just before San Bernardino.) While I was driving, Ray had talked about his wife and his home, but that was back in 'Jersey! Ray did not strike me as the "swinger type," but a wife on both coasts!? "Not to worry," explained Ray. That was his ***only*** wife, and ***she*** was still in New Jersey. But ***we*** were in California. I was impressed. Ray started explaining further when another radio crackled and Ray said he hadn't heard that area on six in a long time. Off he went. I figured it was going to be a long night there at the rest stop. While he chatted with another new found friend, I jumped out of the cab to cool a hot tire.

Yes, that trip did make an impression. It was the first and last one that Ray and I took together. That was both good and bad. It was bad, 'cause I wanted to know more about these radios that covered coast-to-coast with almost telephone quality. Good because I could sleep at night without all the noise and strange language like "CQ, QSL, 5n'9, 73," and all the other strange words Ray used. He was definitely one weird trucker.

I haven't seen Ray in about 8 years now. We've gone our separate ways. I've long forgotten the rest of his K2 call sign. Maybe I'll find Ray some day on HF. I'll keep an ear out for ole' Ray, mobiling out there, talkin to his XYL in 'Jersey. I'll be sure to thank him for introducing me to ham radio. Maybe he wasn't so weird after all.

73
Pete, KN4OO

[Ed.: Many thanks to Al & Pete, for yet 2 more ***exceptional*** RARS Challenge replies!]

THE 2-METER BAND PLAN

... WHAT, AND WHY

by Gary Pearce KN4AQ

Your shiny, new (or dusty, old) synthesized two-meter rig will tune the whole band, 144 to 148 MHz. Your shiny, new Tech license (or dusty, old Extra) lets you legally transmit anywhere in the band as well. You and your pal Fred (or Martha) want to chat for a while, and you don't want to tie up the repeater (an admirable idea). You're close enough to talk "simplex." You've only got one problem: Where in that big, wide two-meter band do you go? Your radio can tune literally hundreds of frequencies.

Do you just pick any old frequency and plop your signal down? Is there any organization to two-meters besides the repeaters? You do want to be "socially responsible" and not step on anybody's toes, so to speak. You've heard talk about satellites on two-meters (but you've never actually heard one), and you've heard some people use the band for some strange stuff besides FM. So what, as Wilfred Brimley might say over a hot bowl of oatmeal, is the "right thing to do?"

Yes, Virginia (and South Carolina), there is a plan organizing two-meters. It's called the Band Plan. It is absolutely almost voluntary, a lady's and gentlemen's agreement about who does what and where. Here's WHAT it is, and then, an explanation of WHY it is. My sources for information are the ARRL repeater directory, the SERA (SouthEastern Repeater Association), and my own personal experience.

144.0 - 144.1 MHz CW ONLY (by FCC regulations)

144.1 - 144.3 MHz Sideband. The lower part of this band is used for "weak signal" work. 144.2 is the SSB calling frequency. A conscientious operator will avoid using FM in this area.

144.3 - 144.5 MHz OSCAR satellite use. Yep, no FM here either (geez, where can I use FM?)

144.5 - 144.9 MHz FM repeater inputs. Use FM here (but only when using the repeaters. See 145.1 - 145.5.

144.9 - 145.0 MHz This is sort of a "no man's land." Or maybe an "every man's land." Anything goes here, and FM Simplex ought to be OK. I suggest 20 kHz "channels," to match the spacing of the repeaters above and below this segment, so 144.91, 144.93, 144.95, 144.97 and 144.99 would work well.

145.0 - 145.1 MHz The five 20 kHz channels here are used for Packet, and somebody with more knowledge than me will have to write an article about that. Avoid these channels for simplex voice work (besides, packet signals are really annoying to listen to).

145.1 - 145.5 MHz FM repeater outputs. These "channels," spaced every 20 kHz from 145.11 to 145.49, are coordinated for repeater outputs. The input for each channel is 600 kHz below the output.

145.5 - 145.8 MHz There's more Packet here, in 20 kHz channels (hmmmm, seem's I've stopped putting quotes around the word "channels"). The ARRL lists the space as "experimental," so unless you're "experimenting," there are still better places to go for that FM simplex chat.

145.8 - 146.0 MHz More OSCAR satellite stuff goes here. Satellites use things called "linear translators," which are a little like repeaters, but not quite. Can your little handie-talkie or 50 watt base station bother a satellite? Yes, and you'd never know.

146.0 - 146.385 MHz FM repeater inputs. See 146.61 - 147.00 MHz "repeater outputs" for more information. And we still haven't hit the FM simplex

gold mine. But be patient, because...

146.4 - 146.58 MHz is FM SIMPLEX!!! Hooray! Oh, wait... there's an asterisk here in the record books. What's this? In some areas, the channels 146.40 thru 146.505 are repeater inputs. This is getting complicated! What about here around Raleigh? OK, all the channels in this segment are simplex around here except 146.475 (which is an input for a 147.075 repeater near Burlington). See your ARRL or SERA repeater directory for local information in other areas. The channels in this part of the band are set up every 15 kHz, but technically that doesn't work so well for simplex. There can be a fair amount of interference between FM signals only 15 kHz apart. So I'm going to recommend you use only 30 kHz channels for simplex here: 146.40, 146.43, 146.46, 146.49, 146.52, 146.55 and 146.58. By the way, 146.52 is the NATIONAL SIMPLEX CHANNEL. A lot of people think it's the only simplex channel, but as you can see, it has some company. But wait, there's more to come...

146.61 - 146.985 Repeater Outputs. In general, these channels are spaced every 15 kHz, and are "paired" with repeater input channels 600 kHz below (like the RARS repeater, who's output is 146.64, with an input 600 kHz lower, on 146.04).

147.00 - 147.39 MHz More repeater outputs, but generally these repeaters have inputs located 600 kHz above the outputs (like the PCRN repeater on 147.15, and it's input on 147.75). In some areas, a few of the repeaters between 147.00 and 147.075 have inputs 600 kHz below their outputs, like that repeater in Burlington.

147.42 - 147.51 MORE SIMPLEX!!! Fred and Martha can shoot the breeze to their heart's content here. Once again, I recommend 30 kHz spaced channels, 147.42, 147.45, 147.48, and 147.51. I'll bet I've just recommended somebody's private, secret, ultra-quiet simplex channel. Sorry.

147.54 and 147.57 Packet. Hey, you packet guys, where's your article? Nationwide, these two channels are allegedly FM simplex (voice), but around here the digital guys have scarfed them up. 147.57 is our very own DX Packet Cluster.

147.6 - 147.99 FM repeater inputs, paired 600 kHz above the inputs.

That's the "what." Now, a little of the "why?"

Back in the old, old days, when I got started on two meters (1964, as the novice WN9NSO — novices could operate two meter phone back then), most two meter operators used AM phone. Activity was concentrated between 145.0 and 145.5. "Concentrated" is a poor choice of words. Even in metropolitan Chicago with its teeming millions, you'd be lucky to hear three conversations going at the same time in the evening. And during the day — zero... forget it.

Everybody had a VFO on their receiver and could tune across the whole band. Some had VFOs for their transmitters, and they could transmit anyplace. Most of us had crystal controlled transmitters, and were limited to a few frequencies (not "channels"). It didn't matter. To begin a conversation, you turned on your transmitter and called "CQ CQ CQ CQ CQ two meters..." for a good long while. Then you tuned across the whole band (actually, just 145.0 to 145.5), listening for an answer. You had to tune the band, because somebody with a crystal controlled ("rockbound") transmitter might be answering you, and of course they couldn't call you on your frequency.

2 Meter Band Plan, continued

One thing a lot of us wanted in those days was something like a "calling" channel — something a bunch of club members could monitor for activity, someplace you'd be heard by everybody as soon as you spoke the first letter of your callsign. And in some areas that was done with some success. But technically it didn't work that well. And of course, all activity was "simplex," although we didn't call it that. (We didn't call it anything — with no "repeaters," we didn't need the word "simplex.") There was a little mobile activity, certainly no "handheld" radios, but mostly home stations.

Due to some changes in rules and band planning for the commercial two-way services (police, fire, taxi and business radio), in the early 1960s a large amount of surplus commercial equipment became available for conversion to Amateur frequencies. The commercial band runs from 152 - 160 MHz, just above two-meters. A new set of crystals and some alignment was usually all it took to get these old rigs going. But there was a big logistics problem.

The commercial FM two-way service was "channalized." Crystal controlled transmitters, and crystal controlled RECEIVERS! Common, necessary and ideal for commercial purposes, this was foreign indeed to hams. On HF, we had shed the shackles of crystals for the free-ranging VFO years ago. Even on two- meters, at least everyone had a VFO receiver. What's this crystal controlled receiver business?

It didn't help that CB radio was "channalized." That put such a stigma on the idea of a crystal controlled receiver that the Amateur FM pioneers suffered greatly the insults and derision of the AM and SSB crowd. (Pretty small "crowd," actually.) And that was before the "10-4 Good Buddy" CB trucker craze of the mid-'70s.

Undaunted, or sometimes just a little daunted, FM interest grew. And the thing that sparked the interest the most was REPEATERS. We didn't invent them (well, maybe we did, I don't know — there were a few Amateur AM repeaters in the olden days). These repeaters were adapted from commercial service, though, and they formed the rallying point for the early FM users. But there were problems to solve and questions to answer in order to make this "channalized" crystal controlled receiver work in ham radio.

That's right, the big question is, if it's going to be just one frequency, then WHAT frequency? (Most of the commercial ra- dios were single-channel, or at best, two-channel). And the an- swer, echoing from the heavens as far as I can tell, was "146.94." We called it "Nine-Four" for short, and everybody in the mid-60's "crystaled-up" their FM radio for .94. (Today, the language has changed. People say "Six-Six-Four" and "Seven-One- -Five," but you'll hear some of us old-timers still say "Five- Two" and "Eight-Eight.")

If there were no repeater in an area, it would be .94 simplex. If there were a repeater, it would be "34/94" (146.340 input). Notice the 600 kHz spacing. I don't know where that spacing came from. I do know that FM occupied the top two MegaHertz of two meters, previously empty. As a 145.3 MHz user, the numbers above 146 MHz sounded strange and foreign to me.

A few years passed, FM interest grew, better multi-channel equipment passed into our hands from the commercial service, and low and behold, hams wanted to put a second repeater on the air in some big cities. OK, genius, what "channel" do we use for that repeater? Well, the commercial people were using 60 kHz channel spacing, so the equipment was designed for that. The rules in those days didn't allow Techs to go above 147.00, so 146.94 minus 60 equals 146.88 MHz. ".88" became the second most popular repeater frequency for years, and we adopted the commercial 60 kHz "channels." (I'll drop the "quotes" around channels again, OK). It was important to adopt a channel plan because FM tuned "off frequency" makes a terribly loud, distorted racket. As time went by, the commercial people, and later we Amateurs, would "split" the channels to 30 kHz, and then again to 15 kHz, to make more room.

So, some organization began for repeater outputs, but what about inputs. No such luck. Except for 34/94, everybody went their own way. The radio you crystaled up to work in Chicago was useless when you drove to Detroit or Milwaukee (except for the magic 34/94). This was not good enough.

The FM trickle started becoming a flood after 1970. More repeaters were built, multi-channel radios become common, handi- talkies arrived, and order

was needed. We looked to our national leadership, the ARRL, and they pretended we didn't exist. For a while. So with the help of Wayne Greene and 73 Magazine, and some strong regional FM groups (like the Texas VHF FM Society), the first band-plans were hammered out. It meant changes for a lot of repeaters, and it wasn't pretty. There had already been range wars over frequencies. .94 simplex operators fought .94 repeater groups. In Chicago (can you tell I'm from there), two groups put up 146.76 repeaters with overlapping coverage. There was jamming, bad language, hot tempers, and maybe even a punch or two thrown at a hamfest.

The band plan was slowly adopted, and repeaters and individual mobiles, base stations and the few handi-talkies were re-crystaled. 600 kHz "offsets" became the standard. And FM grew and grew. Even the ARRL noticed, and endorsed the band plan.

Soon, there were more repeaters in town than there were sockets for crystals in our radios. What had been a blessing, the channalized "instant conversation" mode, was becoming a straight jacket again. We wanted our freedom back! We remembered the VFOs of our AM days, but the commercial equipment wasn't easily adapted to them. The repeaters must be fixed-frequency of necessity, and the VFOs weren't stable enough or well calibrated enough to be used easily. Just ask anyone who's used a Clegg FM-76.

The Frequency Synthesizer became the next miracle in FM. They weren't new (CB radios had been using them for a while, as had aircraft radios). But commercial FM never needed them, so they weren't available to Amateur FM. A few companies built add-on synthesizers for commercial radios, but they were tricky to get working well, and didn't really catch on. What did catch on was... ICOM.

ICOM's first Amateur product, imported in 1972, was actually a 5 watt, 6-channel crystal controlled radio. It was nothing special by today's standards, but back then the average mobile was 4-channel at best, full of tubes, drew 50 amps in transmit, weighed 100 lbs, and sat in the trunk, connected by a 25 wire cable to a "control-head" under the dash. ICOM's FDFM-2S was solid-state, 6-channels, and nearly as small as just the control head of the commercial units. Repeaters made the 5-watt output acceptable.

But all the band-planning made something else workable — a relatively simple frequency synthesis scheme called "crystalplexing." With just a handfull of crystals, the ICOM IC-230 was able to generate all the band-plan channels, complete with repeater offsets. The fuse was lit. Two meters was destined to grow into the most popular Amateur band, and FM was to be the mode. The Japanese radios grew more sophisticated and less expensive. All because a few hundred Amateurs got together and said "we can plan this." The band plan is not an FCC regulation. It was, and is, voluntary.

OK, Fred and Martha, you've come a long way, trying to find a simplex channel for your rag-chew this afternoon. The band plan has served you well. Since FM still makes a terrible, distorted racket when tuned off-frequency, even the simplex band plan makes sense. And conscientious operators won't want to interfere with repeaters, SSB DXers, satellites or our other two-meter neighbors. There are plenty of places to go for simplex, now that you know what they are.

But you'll find some pressure on simplex, and you may want to stand up for it, make a few speeches at a club meeting or write a letter to the newsletter. A few repeaters have claimed "simplex channels" since all the "repeater channels" were busy (none in the Raleigh area, except perhaps the 147.075 in Burlington). And as noted, the digital types will compete with the voice types for a slice of spectrum.

Band planning is not a thing of the past — it is a living, vital aspect of Amateur Radio. And not just for two-meters. With "DX Windows," Packet, SSTV, RTTY, Nets and other special-interests abounding, all Amateur bands have band plans. Voluntary band plans, for ladies and gentlemen.

RARS Crystals Officers

Elected for the 1992 Terms of Office were:

Chairlady	Liz Gordon-White, KO4CK
Secy/Newslttr	Sandy Thomas, KC4SYV
Treasurer	Doris Plaks
Social Committee Chair	Nola Alderman

MAKING ANTENNAS PLAY

by Steve Modena AB4EL

A 30 M Collinear Vertical

What is collinear; and why collinear? Figure 1 shows two radiation patterns generated by the MiniNec computer program. Antenna 1A is a 3/4 wavelength STRAIGHT ground-mounted vertical. Antenna 1B is a 3/4 wavelength COLLINEAR ground-mounted vertical. The radiation pattern in 1A shows that there is a broad range of takeoff angles. On HF this antenna is a good compromise for both near and far work. In contrast, the radiation pattern in 1B is strongly biased to radiate at low angles only! This is preferable for working DX on HF. Antenna 1B puts more power into the low angle radiation, and will sound stronger to DX than antenna 1A.

If you only work 2 meters, mostly mobile, is this of interest to you? Yes! If you are homebrewing a mag mount antenna, you might keep the following in mind. A quarter-wave whip is a good basic antenna. A "5/8 wave" (really 5/16 wave long) whip gives a better impedance match and some power gain. But extending that whip out to a 3/4 wave is self-defeating. On 2 M there is no skywave return: all high angle radiation heads off into outer space! Your target is the local repeater—best reached with a LOW angle of radiation. The 3/4 wave whip needs a 1/4 wave phasing stub to convert it into a collinear antenna. Otherwise, stick with the "5/8 wave" or 1/4 wave whips.

Now, about the 30 Meter WARC antenna. Figure 2 shows the details and dimensions. I used wooden dowels and plastic ties to spiral mount the phasing stub. Separate the successive turns of 450 ohm twinlead by 2-to-3 inches.

Power is transferred from the lower 1/4 wave portion to the upper 1/2 wave portion by way of the 1/4 wave stub. Currents going into the stub are reflected back and thus travel 1/2 wavelength, causing a 90 degree time (and phase) lag. The phases of the lower portion radiation and the upper portion radiation complement to the advantage of low angle radiation.

For a low number (<25) of insultated radials, the short 1/8 wavelength radials (as shown) are preferred. Lengthening them to 1/4 wavelength or longer reduces radiated signal, according to recent computer modeling results. However, for a very high number of radials, the opposite is true.

I wound a current choke balun into the feed line a little distance from the antenna. That adds one more radial (for free) and keeps the RF from getting back into the rig and shack.

Have you ever wondered why you don't need a choke balun on the coax to your 2 M mag mount antenna? Why doesn't RF travel back along the outside of the coax braid and get into your rig (RF feedback)? The answer may be that the vinyl insulation is a VERY lossy insulator at 144 MHz. Any return RF is lost as heat long before it can get to the HT in your hand.

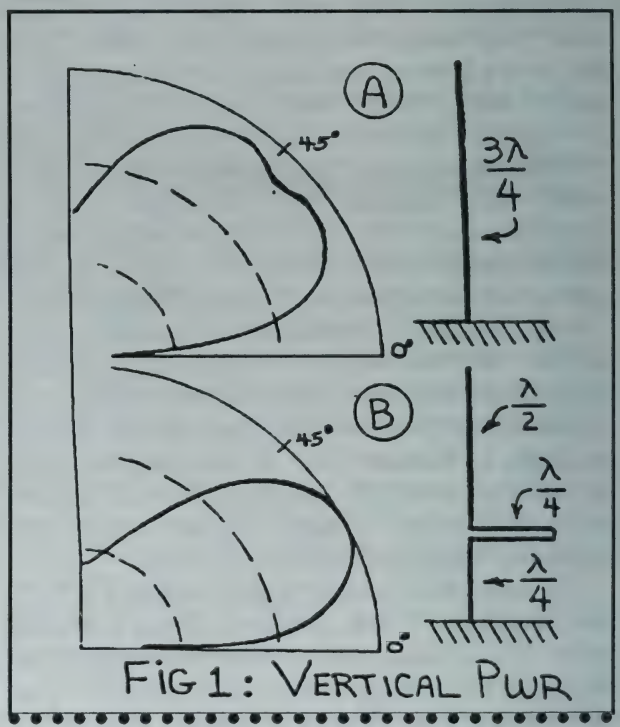


FIG 1: VERTICAL PWR

Congratulations to Sergeant Major Mark Thompson (KC4OCB) on his promotion to his current rank in the Army Reserves. Mark is assigned to the Office of the Deputy Chief of Staff Logistics of the 120th ARCOM at Fort Jackson, SC. [Ed.: Although I was never in the Army, I think that means he has more stripes than most Zebras! Congrats!]

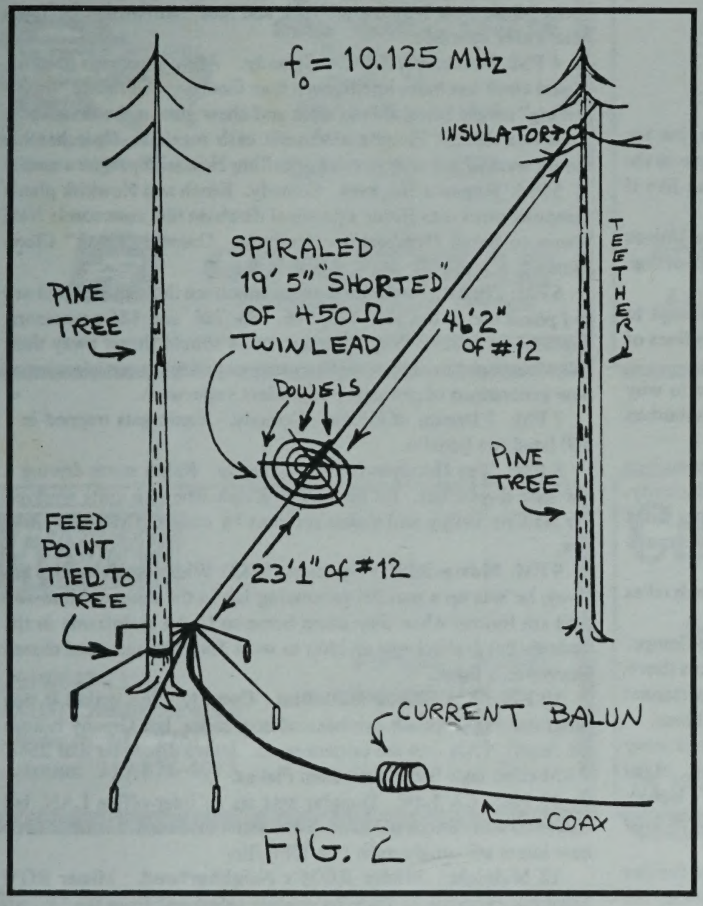


FIG. 2

Ed. Note: Every now and then, I mess up, BIG TIME! Last month I ran Steve's Making Antennas Play article, and left out Fig. 2. So while we all could read how and why, we had very little idea HOW TO. I thought about just running the graphic, but then, you really need the text to go along with it. Oh well, Steve, my apologies for last month.

VHF Challenge

RARS Member Alex Regi, W4FSO, mailed me a copy of a neat looking certificate that can be earned by working the 13 original colonies on VHF (50 MHz or higher, & no repeater or satellite QSOs allowed). Submit evidence (QSLs) to the South Jersey Radio Association, PO Box 1026, Haddonfield, NJ 08033. Contacts with the 13 states (NH, MA, RI, CT, NY, PA, NJ, DE, VA, MD, NC, SC, & GA) must have taken place during calandar 1991. Can any RARS VHF-ers qualify???!!

Novices/Techs Take All At RARS Picnic

That's right, the Novice/Techs beat out the General/Advanced/Extra's at the first annual RARS picnic volleyball game. The player's involved were as follows:

NOVICE/TECHS:
Brian "Hit em low" KD4BFJ
Tab "Is this really Volleyball?" New Tech
Doug "I know ALL the rules" KC4UPZ
Patrick "Set em up -N- Spike em" KB4VYP
Dennis "I Got it!" Mason
Sharon "Foot Stomper (Dennis's)" Mason

GENERAL/ADVANCED/EXTRAS
Chuk "Where's the ball?" KB4MDZ
Dave "Where's the Net?" K4SAN
Gary "The Ball's too hard" KN4AQ
Kevin "Why is the net so High?" KC4THW
Brenda "Maybe I should use two hands" Mason
Christie "I'm takin my Dad's Place" DuBreck

Since the first set of games went so fast, both sides wanted to try it all again. We began a second match set with nine players on each team. The Generals/Advanced/Extras took the second set since the pressure was now gone and this was all just for fun ... right? A third set was held after the chow down and the Novice/Technicians took the last set.

I would be remis if I did not mention our fantastic line judges, Rick "I'll call 'em if I feel like it!" KA3PSK and Pete "Get me a beer!" KN4OO. These guy's really did a great job once I put a whistle in their heads and told them they were the officiators and whatever they said was rule! And, Dave "I'll call em when I'm done with my Pig's feet" N4YKC also played a role as a referee in the third set. Thanks, guys, The game would not have been the same without ya!

73, Rick "At What Point did I lose Control?" N4VQT

What If Computers Ruled TV

Prime time TV is filled with cops, lawyers and doctors, but the people who REALLY run things in this country are the people in the computer industry. I wonder what "TV Guide" would read like if popular culture reflected reality...

8 AM: **This Old Mainframe.** Host Bob Vila revamps a Univac and shows how you can turn your old PCjr into a fuctional doorstop, paperweight, or other decorative object.

9 AM: **Name That Software.** Game show. Users attempt to identify well known programs by looking at the least number lines of source code.

10 AM: **My Three SUNS.** Neighbors get suspicious as to why Fred MacMurray keeps three UNIX based workstations in a suburban neighborhood.

11 AM: **GERALDO.** Talk Show. Apple and IBM executives debate which system leads to the highest increase in productivity. The discussion turns ugly when Apple's Peter Jobs bashes IBM chairman John Akers over the head with a HYPER-CARD manual. Geraldo's nose is broken by a flying Bernoulli Box.

12 Noon: **Lifestyles of the Rich & Visionary.** Robin Leach takes us on a tour of Steve Wozniac's palatial manor.

1 PM: **Battle of the Local Area Network Stars.** Athletic Competition. Middle management execs compete in the floppy diskus throw and 440 meter minicomputer hurdles. Sales and marketing personnel demonstrate latest laptops while performing on the pommel horse.

2 PM: **As the Disk Turns.** Daytime Drama. While John is away at a trade show, Lucinda is having an affair with his Wang. Beau comes home unexpectedly and catches Pam fondling Adam's laptop. Under hypnosis, Sally is trying to figure out how it was possible to get pregnant at a user group meeting.

3 PM: **Wordperfect Strangers.** Daytime Drama. Larry decides that using groupware would be a good way to meet women, but Balki's laser printer explodes, ruining any chances of connectivity for the evening.

3:30 PM: **People's Court:** Judge Wapner hears arguments about Micro Soft Window's "look and feel" similarities to Apple Mac's user interface.

4 PM: **Mayberry, CPU.** Comedy. Andy discovers that his digital clock has more intelligence than Goober, who thinks "multi-tasking" means being able to walk and chew gum at the same time. Aunt Bea debugs Floyd's electronic cash register. Opie has his mouth washed out with soap after calling Howard Sprague a nerd.

5 PM: **Hogan's Hackers.** Comedy. Kinch and Newkirk plan a computer virus into Hitler's personal database that commands Nazi planes to bomb Hamburg to Hamburg. Colonel "Klink" Clone fumes.

6 PM: **Nightly News** Intel execs announce the sequential phase in / phase out of the 386, 486, 586, 686, 786, and 886 processors. Discussions follow: Why computer users should throw away their fully functional machines and buy new machines in anticipation of new generations of processor dependant vaporware.

7 PM: **I Dream of GEnie.** Comedy. Jeanie gets trapped in a 300 baud file transfer.

8 PM: **The Honeymooners.** Comedy. Ralph starts driving a Tri-state digital bus. Ed humiliates Ralph when he quits working for the City Utility and makes millions by creating Norton's Utilities.

9 PM: **Movie: RISCy Business** (1982) While Joel's parents are away, he sets up a parallel processing lab in the house. Mom and Dad are furious when they come home to find a mainframe in the bathtub, but Joel accepts an offer to work for Tektronix, and chases Beaverton's finest.

10 PM: **The Silicon Hillbillies.** Comedy. Jed strikes it rich programming a speech-synthesized hog caller, but Granny heaves the family VAX into the cement pond. Jethro discovers that 256K RAM chips taste better than Corn Flakes.

11 PM: **LA Law.** Douglas sets up an inter-office LAN, but discovers it is being used to send obscene voice mail. Arnie and the new intern are cought nude in a TIFF file.

12 Midnight: **Mister ROM's Neighborhood.** Mister ROM helps put everyone to sleep by reading selections from the "WordStar Instruction Manual."

Tnx to Larry Young, K4LXV
& the Louisville (KY) Apple User's Group Newsletter

ΩMEGA ELECTRONICS
Amplifier Repair - G5RV Antennas
Authorized Ten • Tec Dealer
(919) 266-7373
101-D Railroad St. • P.O. Box 579 • Knightdale, NC 27545
K4BWC *FAX (919) 250-0073*
Bill Edwards *24 Hr.*

Capital Ford, Inc.
4900 Capital Boulevard Raleigh, N.C. 27658
Marie Zucker
Service Advisor
(919) 790-4749
Ford

DUTY TIRE
"The family business that treats you like family"

Dave Tuttle, KB4OKB
Manager
Duty Tire
1819 Poole Rd.
Raleigh, NC
(919) 836-2230

GOODYEAR
CERTIFIED AUTO SERVICE

THE PINE BOX

FURNITURE & GIFTS

Cameron Village Shopping Center

Arline Bliss
411 Daniels St.

Jeff Bliss
833-8104

FONVILLE MORISEY
REALTORS

919/847-2511
8100 Creedmoor Road
Raleigh, NC 27613
Home: 919/876-4073

Theresa Thacher
Sales Associate

Custom Computer

PC Sales, Service, and Consulting
Specializing in Office Automation and Computer Graphics
Your Total Solution

Woody Winstead
KJ4SO
138 Mine Lake Ct. Raleigh, N.C. 27615 (919) 870-1044

Your One-Stop Shop For
Sales, Installation And Service of
Motorola Communications Systems.

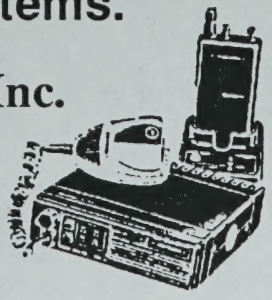
Mobile Communications Service, Inc.

NATIONAL MOTOROLA COMMUNICATIONS SERVICE

MOTOROLA Radius Dealer

Raleigh
878-3998

Durham
477-1610



Sales: Lisa Eller & J.R. Maynard

The Triangle's Only Authorized Motorola Service Station

Amateur Radio -- A National Resource

Raleigh Amateur Radio Society, Inc.
P.O. Box 17124
Raleigh, NC 27619

MR. SHERMAN STARNES W4TZU
ROUTE 1, BOX 99
FRANKLINTON NC 27525

Next Regular RARS Meeting: Wednesday, November 6th, 7:30 PM
NC State Highway Patrol Auditorium, off Blue Ridge Rd.
RARS Nets: Daily @ 8:00 PM on 146.04/64
10 Meter - Tuesdays, 7:00 PM on 28.364 MHz
Youth Net - Thursdays, 8:30 PM, 04/64
YL Info Net - Wednesdays, 9:30 PM, 04/64
RARS Trader's Net - Fridays, 9:00 PM, 04/64
Technical Information Net - Saturdays, 8:30 PM, 04/64
RARS Computer Bulletin Board: 781-2530

Events Calendar

NOV	02-04	ARRL Sweepstakes, CW
NOV	06	RARS ANNUAL AUCTION NIGHT & Election of officers, 7:30pm, NC Highway Patrol Auditorium. See cover for location!!
NOV	13	VHF/UHF SIG Meeting, Info:Ronnie, WA4MJF @ 266-4434
NOV	16,17	ARRL Sweepstakes, phone
NOV	20	RARS Advisory Board Meeting, 7pm, YMCA All Members WELCOME!!
NOV	23,24	CQ World Wide DX Contest, CW
NOV	**23,24**	**Greensboro, NC Hamfest** W/exams
NOV	27	RARS Homebrew/HF SIG Meeting, Info: N1BA @ 846-2692
DEC	04	Regular RARS Meeting, 7:30 pm, YMCA, Hillsboro St. **>>NO EXAMS!!<<**
DEC	07	RARS Christmas Party